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(54) Title: DUAL-STAGE WAFER APPLIED UNDERFILLS

(57) Abstract: A 100% non-volatile, one-part liquid underfill encapsulant is disclosed for application to the active side of a large wafer or integrated circuit chip. Upon coating, the encapsulant is converted to a liquefiable, tack-free solid by exposure to radiation, particularly in the UV, visible and infrared spectrum. The underfill-coated wafer exhibits outstanding shelf aging of months without advancement of cure. The large wafer can be singulated into smaller wafer sections and stored for months after which during solder reflow assembly, the wafer connects are fixed and the underfill liquefies, flows out to a fillet and transitions to a thermoset state on heat activated crosslinking.